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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,011	04/25/2006	Masaaki Takegami	4633-0168PUS1	6000
2292 7590 11/13/2009 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
COX, ALEXIS K				
ART UNIT		PAPER NUMBER		
3744				
NOTIFICATION DATE		DELIVERY MODE		
11/13/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/577,011

Applicant(s)

TAKEGAMI ET AL.

Examiner

ALEXIS K. COX

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the pair of on-off valves provided in the branch pipes and functioning as a three way switching mechanism as claimed in claim 4 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102 (b) as being anticipated by Tanimoto et al (WO 03/001129A1, also published as US Patent Application Publication NO. 2003233836).

Regarding claim 1, Figure 1 of Tanimoto discloses a refrigerant circuit in which a first cooling circuit having a first heat exchanger (41) for cooling inside and a second cooling circuit having a second heat exchanger (51) for cooling inside and a sub compressor (53) are connected in parallel to a heat source side circuit having a main compressor (2A, 2B, 2C), wherein the refrigerant circuit may include three-way switching mechanisms (3B, 20) for switching between a first operation for sending, after refrigerant from the second heat exchanger is compressed in the sub compressor, the refrigerant to a suction side of the main compressor and compressing the refrigerant, and a second operation for circulating, after refrigerant from the first heat exchanger is compressed in the sub compressor, the refrigerant to the first heat exchanger through the second heat exchanger, and the refrigerant circuit performs the second operation during defrosting operation for defrosting the second heat exchanger.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 2-3 and 6-9 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Tanimoto et al (see above).

Regarding claim 2, the first three-way switching mechanism of Tanimoto allows the suction side of the main compressor to communicate with the discharge side of the sub compressor in the first operation and the suction side of the sub compressor in the second operation (see figure 1; trace refrigerant lines as required.) It is noted that Tanimoto does not explicitly disclose the presence of the second three-way switching mechanism to allow the second heat exchanger to communicate with a suction side of the sub compressor in the first operation and the discharge side of the sub compressor in the second operation. However, as this placement would merely constitute a duplication of the three-way switching mechanism applied to the main compressor in a manner comparable to the way it is applied to the main compressor, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a second three-way switching mechanism which was applied in this manner to the sub-compressor in order to enable reversal of the sub circuit independently of the overall circuit, as more frequent defrosting will be needed for the freezing sub circuit than for the merely refrigerating level of the other evaporators.

Regarding claim 3, the three-way switching mechanisms of Tanimoto may be three-way valves (see page 15 lines 30-31; see also paragraph [0054] of the American publication).

Regarding claim 6, the second cooling circuit includes a thermostatic expansion valve (52, see figure 1) which is variable in opening, and control means (80) for keeping the expansion valve being opened fully in the second operation.

Regarding claim 7, Tanimoto et al includes a bypass passage (59) in which refrigerant may bypass the sub compressor during stopping or breakage of the sub compressor (see page 12 lines 4-7; paragraph [0015] of the American publication), and the refrigerating apparatus further comprises control means (80) for stopping, in transition between the second and first operations, the sub compressor for a predetermined time period and allowing the sub compressor to start operating thereafter.

Regarding claims 8 and 9, it is noted that Tanimoto et al does not explicitly disclose the presence of or need for defrosting and the associated controls. As it is common knowledge that failure to defrost evaporators degrades cooling performance and energy efficiency, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply appropriate defrosting start and stop controls in accordance with time and or temperature, as should be evident from the accompanying references cited but not used.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanimoto et al (WO 03/001129A1, also published as US Patent Application Publication No. 2003/0233836) in view of Payne (US Patent No. 1,986,158).

Regarding claim 4, it is noted that the 3-way switching mechanism of Tanimoto et al is not composed of a main pipe and two branch pipes with a pair of on-off valves on each branch pipe. Payne et al explicitly discloses the arrangement of a main passage and two branch passages, with an on/off valve on each passage controlled in concert such that flow goes only through one or the other, to be the equivalent of a three way

valve (see page 2 right column lines 20-23). It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to perform the simple substitution of the arrangement of Payne for that of Tanimoto et al in order to permit cutoff of one passage when repair was required on the other, without an additional cutoff valve between the three way valve and the passage being cut off.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanimoto et al (WO 03/001129A1, also published as US Patent Application Publication No. 2003/0233836) in view of Vogel et al (US Patent Application Publication No. 2002/0078699).

Regarding claim 5, it is noted that Tanimoto et al does not explicitly disclose the use of a thermostatic expansion valve with hot gas bypass. Vogel et al explicitly discloses the presence of both of these for each heat exchanger in a refrigeration system (50, 52, 46, 44, see figure 1A). It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to use the thermostatic expansion valves and bypass passages of Vogel et al in the system of Tanimoto et al in order to better arrange for appropriate defrosting of the evaporators.

Response to Arguments

10. Applicant's arguments, see pages 6-10, filed 7/23/2009, with respect to the rejection(s) of claim(s) 1-9 under Friedman (US Patent No. 4,184,341) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of

Tanimoto et al (WO 3/001129A1), which was also published at US Patent Application Publication No. 2003/0233836).

As a result, all arguments concerning the previous grounds of rejection are moot.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Blake (3,150,498) discloses a system with a sub compressor in parallel with evaporators on a refrigeration system with explicit defrosting control which uses three-way valves to switch refrigerant flows. Iwanami et al (US Patent Application Publication No. 2002/0157412) discloses an automotive air conditioner with a sub compressor. Nishimura et al (US Patent Application Publication No. 2009/0272135) discloses a system with compressors and condensers as sets in parallel with each other. Arshansky et al (US Patent No. 6,094,925) discloses parallel refrigeration systems with defrost. And Baars (US Patent No. 1,932,007) also discloses defrost control of a refrigeration system, as do all previously applied references.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXIS K. COX whose telephone number is (571)270-5530. The examiner can normally be reached on Monday through Thursday 8:00a.m. to 5:30p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AKC/

/Frantz F. Jules/

Supervisory Patent Examiner, Art Unit 3744